

**AMENDMENTS TO THE CLAIMS**

1-14. (Canceled)

15. (Currently Amended) A liposomal formulation comprising liposomes that comprise phosphatidyl choline, phosphatidyl glycerol and a porphyrin macrocycle photosensitizer ~~a porphyrin macrocycle photosensitizer, phospholipids and one or more sugars~~, wherein said liposomes have a mean particle size distribution of between about 130 nm and less than 200 nm.

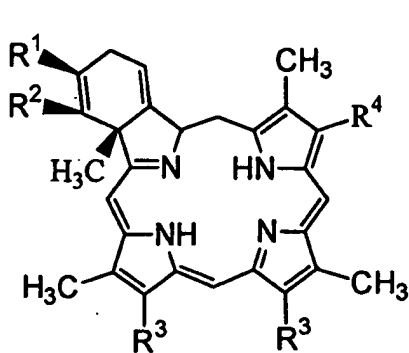
2 16. (Previously Presented) The liposomal formulation of claim 15 in freeze-dried form.

25 17. (Currently Amended) The liposomal formulation of claim 41, wherein said sugars are selected from disaccharides or polysaccharides.

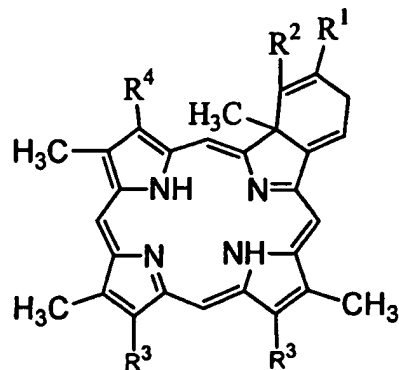
26 18. (Previously Presented) The liposomal formulation of claim 17 wherein said disaccharides are selected from lactose or trehalose.

3 19. (Previously Presented) The liposomal formulation of claim 15 wherein the lipid bilayer of said liposomes consists essentially of dimyristoyl phosphatidyl choline and egg phosphatidyl glycerol.

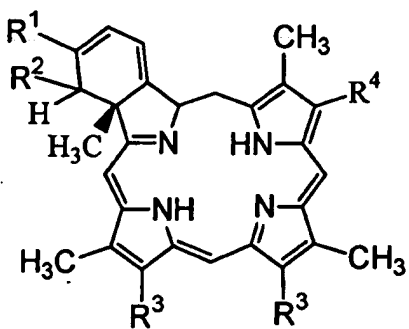
20. (Previously Presented) The liposomal formulation of claim 15 wherein said porphyrin macrocycle photosensitizer is a hydro-monobenzoporphyrin (Gp) of any one of the following formulas



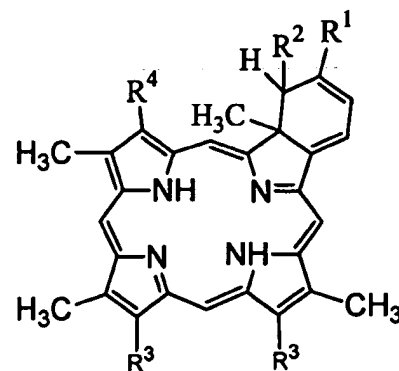
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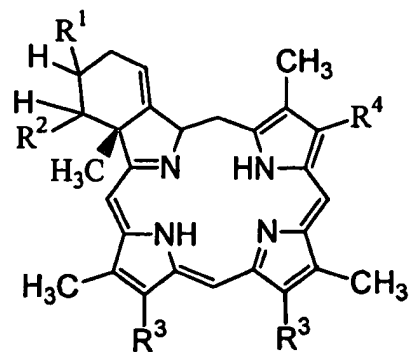
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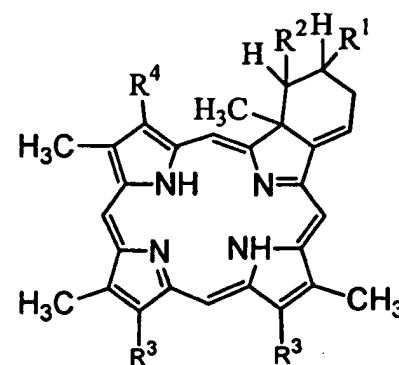


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5

or



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and having a light absorption maximum between 670-780 nm, mixtures thereof, and the metalated and labeled forms thereof,

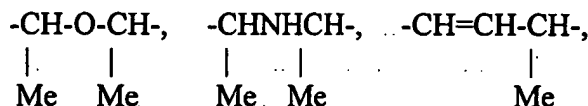
wherein each  $R^1$  and  $R^2$  is independently selected from the group consisting of carbalkoxy (2-6C), alkyl (1-6C) sulfonyl, aryl (6-10C) sulfonyl, aryl (6-10C); cyano; and  $-\text{CONR}^5\text{CO}-$  wherein  $R^5$  is aryl (6-10C) or alkyl (1-6C);

each  $R^3$  is independently carboxyalkyl (2-6C) or a salt, amide, ester or acylhydrazone thereof, or is alkyl (1-6C); and

$R^4$  is  $-\text{CH}=\text{CH}_2$ ,  $-\text{CHOR}^{4'}$ ,  $-\text{CHO}$ ,  $-\text{COOR}^{4'}$ ,  $-\text{CH}(\text{OR}^{4'})\text{CH}_3$ ,  $-\text{CH}(\text{OR}^{4'})\text{CH}_2\text{OR}^{4'}$ ,  $-\text{CH}(\text{SR}^{4'})\text{CH}_3$ ,  $-\text{CH}(\text{NR}^{4'})_2\text{CH}_3$ ,  $-\text{CH}(\text{CN})\text{CH}_3$ ,  $-\text{CH}(\text{COOR}^{4'})\text{CH}_3$ ,  $-\text{CH}(\text{OOCR}^{4'})\text{CH}_3$ ,  $-\text{CH}(\text{halo})\text{CH}_3$ , or  $-\text{CH}(\text{halo})\text{CH}_2(\text{halo})$ , wherein  $R^{4'}$  is H, alkyl (1-6C) optionally substituted with a hydrophilic substituent,

an organic group of less than 12C resulting from direct or indirect derivatization of vinyl, or

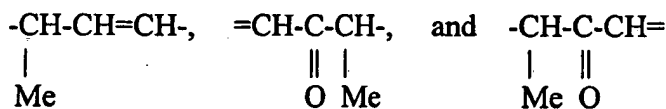
1-3 tetrapyrrole-type nuclei of the formula -L-P wherein -L- is selected from the group consisting of:



(a)

(b)

(c)



(d)

(e)

(f)

and P is selected from the group consisting of Gp which is of the formula of Figure 1-2, but lacking  $R_4$  and conjugated through the position shown as occupied by  $R^4$  to L;

with the proviso that, if  $R^4$  is  $-\text{CH}=\text{CH}_2$ , both  $R^3$  groups cannot be carbalkoxyethyl.

5 21. (Previously Presented) The liposomal formulation of claim 20 wherein each R<sup>3</sup> is -CH<sub>2</sub>CH<sub>2</sub>COOH or salt, amide, ester or acylhydrazone thereof.

6 22. (Previously Presented) The liposomal formulation of claim 20 wherein each of R<sup>1</sup> and R<sup>2</sup> is carbalkoxy (2-6C).

7 23. (Previously Presented) The liposomal formulation of claim 21 wherein each of R<sup>1</sup> and R<sup>2</sup> is carbalkoxy (2-6C).

8 24. (Previously Presented) The liposomal formulation of claim 20 wherein said hydro-monobenzoporphyrin (Gp) is selected from the group consisting of:

BPD-DA wherein R<sup>1</sup> and R<sup>2</sup> thereof are carbomethoxy;

BPD-DB wherein R<sup>1</sup> and R<sup>2</sup> thereof are carbomethoxy;

BPD-MA wherein R<sup>1</sup> and R<sup>2</sup> thereof are carbomethoxy and R is methyl; and

BPD-MB wherein R<sup>1</sup> and R<sup>2</sup> thereof are carbomethoxy and R is methyl.

9 25. (Previously Presented) The liposomal formulation of claim 24 wherein said hydro-monobenzoporphyrin (Gp) is BPD-MA wherein R<sup>1</sup> and R<sup>2</sup> thereof are carbomethoxy and R is methyl.

10 26. (Previously Presented) The liposomal formulation of claim 19 wherein the amounts of photosensitizer, dimyristoyl phosphatidyl choline, and egg phosphatidyl glycerol in said liposomes are, relative to each other on a per weight basis, about

0.2 to 0.4 of porphyrin; 0.94 to 1.88 of dimyristoyl phosphatidyl choline; and 0.65 to 1.30 of egg phosphatidyl glycerol.

11 27. (Previously Presented) The liposomal formulation of claim 26 wherein the amount of sugar, relative to said amounts of photosensitizer, dimyristoyl phosphatidyl choline, and egg phosphatidyl glycerol in said liposomes on a per weight basis, is about 8.0 to 12.0 of sugar when said sugar is a disaccharide, or about half that amount if said sugar is a monosaccharide.

28. (Previously Presented) The liposomal formulation of claim 19 further comprising an antioxidant.

29. (Previously Presented) The liposomal formulation of claim 28 wherein said antioxidant is butylated hydroxytoluene or L-ascorbic acid 6-palmitate.

30. (Previously Presented) The liposomal formulation of claim 15 further comprising a pharmaceutically acceptable excipient.

31. (Previously Presented) A method of providing photodynamic therapy to a subject comprising  
administering a formulation according to claim 15 to said subject wherein the porphyrin macrocycle photosensitizer, after release from said formulation, is capable of localizing to target tissues or cells, and

irradiating said tissues or cells at an appropriate wavelength of light after passage of sufficient time for said porphyrin macrocycle photosensitizer to localize.

32. (Previously Presented) A method of providing photodynamic therapy to a subject comprising administering a formulation according to claim 19 to said subject wherein the porphyrin macrocycle photosensitizer, after release from said formulation, is capable of localizing to target tissues or cells, and

irradiating said tissues or cells at an appropriate wavelength of light after passage of sufficient time for said porphyrin macrocycle photosensitizer to localize.

33. (Previously Presented) The liposomal formulation of claim 15 wherein the ratio of sugar to phospholipid is about 10-20 to 0.5-6.

34. (Previously Presented) The liposomal formulation of claim 33 wherein the ratio of sugar to phospholipid is 10 to 1.5-4.0.

19 35. (Previously Presented) The liposomal formulation of claim 15, wherein said liposomes are fast breaking and rapidly release the photosensitizer into the bloodstream to associate with lipoproteins upon *in vivo* administration.

20 36. (Previously Presented) The liposomal formulation of claim 15, wherein the osmolarity of said liposomes is that of human blood.

21 37. (Currently Amended) A pharmaceutical composition comprising the liposomal formulation of claim 15 ~~liposomes comprising dimyristoyl phosphatidyl choline, phosphatidyl glycerol and a porphyrin macrocycle photosensitizer, wherein said liposomes have a mean particle size distribution of less than 200 nm.~~

38. (canceled)

22 39. (New) The liposomal formulation of claim 15, wherein said phosphatidyl choline is dimyristoyl phosphatidyl droline.

23 40. (New) The liposomal formulation of claim 15, wherein said phosphatidyl glycerol is egg phosphatidyl glycerol.

24 41. (New) The liposomal formulation of claim 15, wherein said liposomes further comprise one or more sugars.